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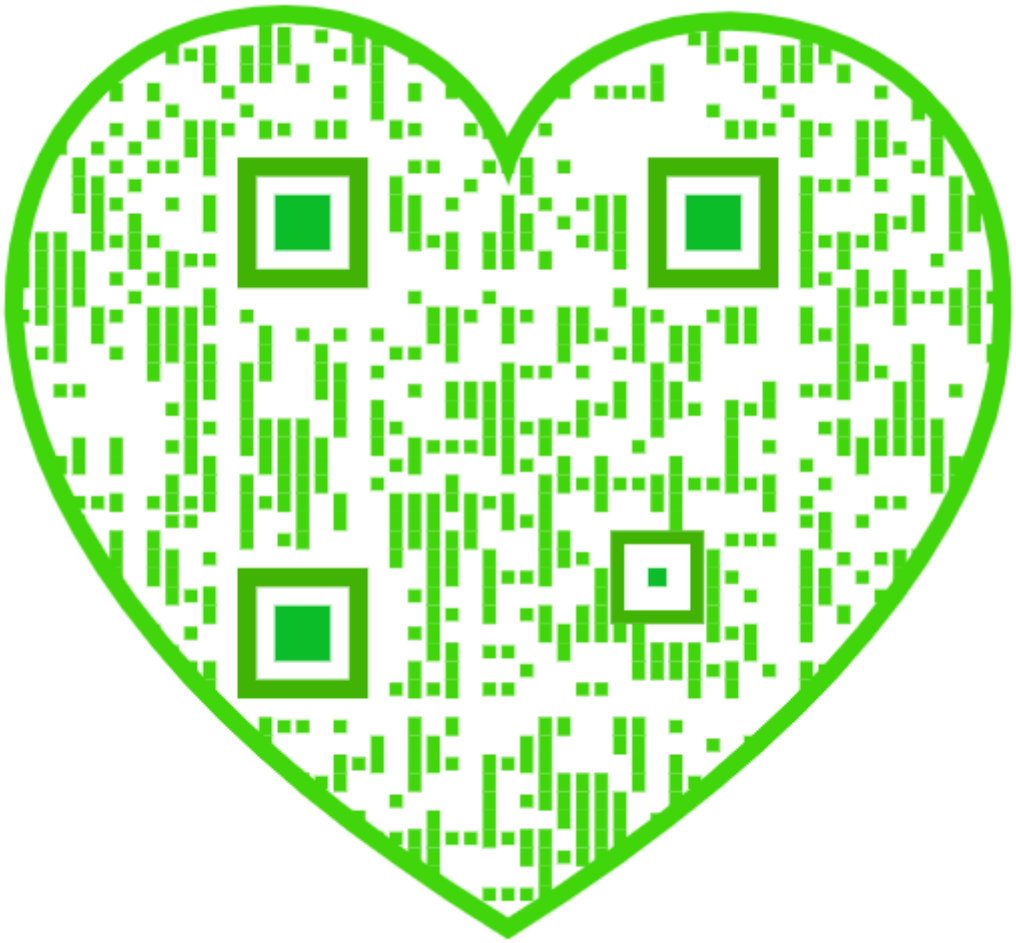

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THE attention of the reader is earnestly called to the concluding paragraphs on pages 55–56, with the hope that observations on the points therein mentioned may be made and forwarded to the author, for which full credit will be given in a future publication on the subject.

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ANCIENT AND MODERN METHODS

OF

ARROW-RELEASE.

BY

EDWARD S. MORSE.

Director Peabody Academy of Science.

[From the BULLETIN OF THE ESSEX INSTITUTE, VOL. XVII. Oct--Dec. 1885.]

ANCIENT AND MODERN METHODS

OF

ARROW-RELEASE.

BY EDWARD S. MORSE.

When I began collecting data illustrating the various methods of releasing the arrow from the bow as practiced by different races, I was animated only by the idlest curiosity. It soon became evident, however, that some importance might attach to preserving the methods of handling a weapon which is rapidly being displaced in all parts of the world by the musket and rifle. While tribes still survive who rely entirely on this most ancient of weapons, using, even to the present day, stone-tipped arrows, there are other tribes using the rifle where the bow still survives. There are, however, entire tribes and nations who have but recently, or within late historic times, abandoned the bow and arrow, its survival being seen only as a plaything for children.

It was not till I had accumulated quite a collection of sketches and other memoranda illustrating the methods of arrow-release, not only of existing but of ancient races, as shown by frescos and rock sculpture, that I realized that even so trivial an art as that of releasing the arrow

might possibly lead to interesting results in tracing the affinities of past races.

I am led to publish the data thus far collected, incomplete as they are, with the intention of using the paper in the form of a circular to send abroad, with the hope of securing further material for a more extended memoir on the subject.

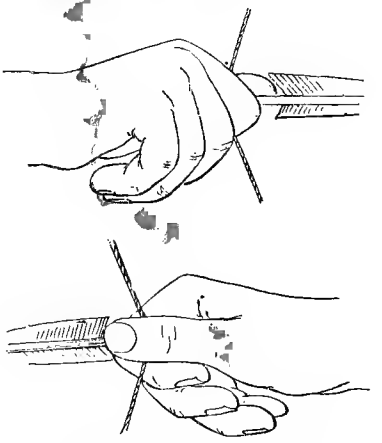
My interest in the matter was first aroused by having a Japanese friend shoot with me. Being familiar with the usual rules of shooting as practiced for centuries by the English archers, and not being aware of more than one way of properly handling so simple and primitive a weapon as the bow and arrow, it was somewhat surprising to find that the Japanese practice was in every respect totally unlike ours. To illustrate: in the English practice, the bow must be grasped with the firmness of a smith's vice; in the Japanese practice, on the contrary, it is held as lightly as possible; in both cases, however, it is held vertically, but in the English method the arrow rests on the left of the bow, while in the Japanese method it is placed on the right. In the English practice a guard of leather must be worn on the inner and lower portion of the arm to receive the impact of the string; in the Japanese practice no arm-guard is required, as by a curious fling or twirl of the bow hand, coincident with the release of the arrow, the bow (which is nearly circular in section) revolves in the hand, so that the string brings upon the outside of the arm where the impact is so light that no protection is needed. In the English method the bow is grasped in the middle, and consequently the arrow is discharged from a point equidistant from its two ends, while the Japanese archer grasps the bow near its lower third and discharges the arrow from this point. This altogether unique method, so far as I am aware, probably arose from the custom of the archers in feudal times

shooting in a kneeling posture from behind thick wooden shields which rested on the ground. While all these features above mentioned are quite unlike in the two peoples, these dissimilarities extend to the method of drawing the arrow and releasing it. In the English method the string is drawn with the tips of the first three fingers, the arrow being lightly held between the first and second fingers, the release being effected by simply straightening the fingers and at the same time drawing the hand back from the string; in the Japanese method of release the string is drawn back by the bent thumb, the forefinger aiding in holding the thumb down on the string, the arrow being held in the crotch at the junction of the thumb and finger.

These marked and important points of difference between the two nations in the use of a weapon so simple and having the same parts,— namely, an elastic stick, a simple cord, a slender barbed shaft,— and used by the two hands, naturally led me to inquire further into the use of the bow in various parts of the world, and to my amazement I found not only a number of totally distinct methods of arrow-release with modifications, or sub-varieties, but that all these methods had been in vogue from early historic times. Even the simple act of bracing or stringing the bow varies quite as profoundly with different races.

The simplest form of release is that which children the world over naturally adopt in first using the bow and arrow, and that is grasping the arrow between the end of the straightened thumb and the first and second joints of the bent forefinger. I say naturally, because I have noticed that American as well as Indian and Japanese children invariably grasp the arrow in this way in the act of shooting. With a light or weak bow, such a release is the simplest

and best; and in this release it makes but little difference upon which side of the bow the arrow rests, provided the bow is held vertically. This release, however, prevents the drawing of a stiff bow unless one possesses enormous



Figs. 1 and 2. Primary release.

strength in the fingers. Figs. 1 and 2 illustrate this release. Arrows used in this release are usually knobbed at the nock, or proximal end of the arrow, for conven-

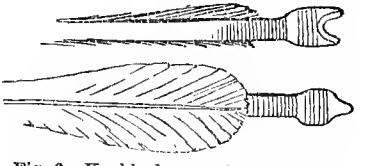


Fig. 3. Knobbed arrow from Oregon.

ience of holding; and an arrow of this form indicates a release of this or of a similar nature (Fig. 3).

The Ainos of Yezo practice this simple release. Their bow is short and highly strung when in use, and an arm-

guard is not required, as the recoil of the string, from the high tension of the bow, is arrested before striking the arm. Some of the old English archers also avoided the use of the arm-guard by using highly strung bows.

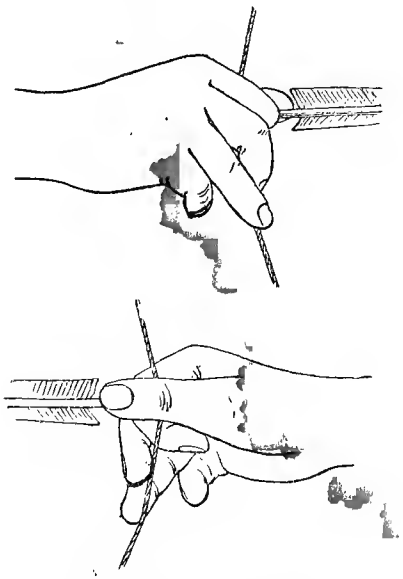
It is recorded that the Demerara Indians of South America practice this form of release; and from a photograph of a Ute Indian in my possession I should infer that that tribe also practiced this release. Col. James Stevenson informs me that when the Navajos shoot at prairie dogs they use this release, so that the arrow will not penetrate the ground if it misses its mark; and Mr. Daniel S. Hastings informs me that the Chippewa Indians sometimes practice this release.

I am indebted to Dr. S. J. Mixter for a photograph which he made for me, of an old Micmac Indian in the act of releasing the arrow in the primary way. The man is one of the oldest Micmacs in the Cascapedia settlement on the north shore of the Bay of Chaleur and he informed Dr. Mixter that he often used the bow when a boy, and practiced the release as represented. He also said that the other tribes in that part of Canada in the use of the bow drew the arrow in the same way. A member of the Penobscot tribe at Moosehead Lake gave me the primary release as that practiced by the tribe, and seemed incredulous when I told him that there were other methods of drawing the arrow.

This primitive method of releasing the arrow I shall designate as the *Primary release.*

The next form of release to be considered is one which is a direct outgrowth from the primary release. This release consists in grasping the arrow with the straightened thumb and bent forefinger, while the ends of the second and third fingers are brought to bear on the string to as-

sist in drawing. Figs. 4 and 5 illustrate the attitude of the hand in this release. Mr. Paul Mamegowena, an Ottawa Indian, informs me that his tribe practice this release, and he illustrated the method to me. Through the courtesy of Mr. Frank Hamilton Cushing I was enabled to make inquiries of a number of Zuñi chiefs in regard to their



Figs. 4 and 5. Secondary release.

method, and the release practiced by them differed in no respect from that of the Ottawas.

Mr. Daniel S. Hastings, formerly civil engineer on the Northern Pacific Railroad writes to me as follows regarding the Chippewa Indians of northern Wisconsin: "I have watched the Indians so as to find out their manner of drawing back the bow-string and releasing the arrow, and I find they all agree in one respect: they all grasp the arrow

between the thumb and forefinger. Some of them use the thumb and forefinger alone, while others use the second, and still others add the second and third fingers to assist in pulling the string back, and let the string slip off the ends of the second and third fingers at the same instant the arrow is released from between the thumb and forefinger." This release, though clearly distinct from the primary release, is an advance upon it in the added assistance of one or two fingers in pulling back the string; and the description given by Mr. Hastings is confirmatory of the natural relations existing between the two releases. For this reason it will be designated as the *Secondary release.*

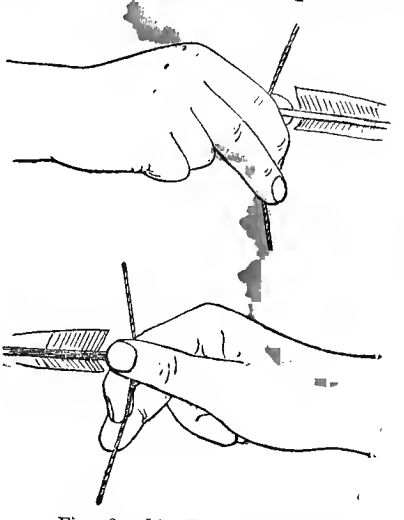
Mr. La Flesche, an intelligent Omaha, showed me a release practiced by his people which differs sufficiently from the secondary release to warrant its recognition as a separate form. In this release the forefinger, instead of being bent, is nearly straight with its tip, as well as the tips of the second and third fingers, pressing or pulling on the string, the thumb, as in the primary and secondary release, active in assisting in pinching the arrow and pulling it back. This release I shall call the *Tertiary release.* (See Figs. 6 and 7.)

Lieut. A. W. Vogdes, U. S. A., has informed me that the Sioux, Arapahoes, and Cheyenne practice the tertiary release; and Col. James Stephenson has noticed this release practiced not only by the two latter tribes but by the Assiniboins, Comanches, Crows, Blackfeet, and Navajos. Mr. La Flesche and Lieut. Vogdes informed me that the tribes using this release held the bow nearly horizontally.

In holding the bow horizontally the release-hand is held with the palm uppermost, the arrow, of course, resting on the bow. In the Zuñi and Ottawa practice, the bow

being held vertically or nearly so, the arrow is placed at the left of the bow. It is possible that originally the bow was held horizontally, but necessities arising, as in shooting in a forest, or shooting side by side with others closely appressed, the bow was required to be held vertically. In thus turning the bow-hand in the only way it could be turned conveniently, the arrow would be brought to the left of the bow vertical.

As will be shown further on, the position of the arrow



Figs. 6 and 7. Tertiary release.

either to the right or to the left of the bow vertical is determined in most cases by the method of release.

In the primary and secondary releases, however, it makes but little difference on which side the arrow is placed; and some tribes, using the bow vertical, place the arrow to the right, and this is probably a quicker way of adjusting the arrow when shooting rapidly. Col. James Stevenson informs me that Navajo Indians practice three methods of release, namely, the primary release already

alluded to, the tertiary release, and a variety of the Mediteranean release, which will be described further on.

During the recent visit of the Siamese embassy to this country, I obtained from its members through the courtesy of Mr. Wilberforce Wyke, interpreter, some interesting facts concerning the use of the bow in Siam. It was curious to find that the Siamese practiced the tertiary release; with this difference, however, that one finger only is used on the string instead of two. Mr. Nai Tuan illustrated the method to me, and explained that little use was made of the bow and arrow, its practice being confined to the shooting of small birds and fishes.

Major Snayh of the embassy told me that poisoned arrows were also used, in which case the bow was held horizontally, and the bow-hand grasped not only the bow, but a grooved board in which the arrow rested. In the last century, it was customary for the Turkish archer to use a grooved piece of horn which was held in the bow-hand directed towards the string. In this grooved piece the arrow ran, and by this contrivance the bow could be drawn much further back, even to the extent of bringing the head of the arrow four or five inches within the bow. According to Wilkinson, the ancient Egyptians were familiar with this curious adjunct to the bow.

E. H. Man, Esq., in his work on the Andaman Islanders,[1] p. 141, says that the inhabitants of Great Andaman "place the arrow in position between the thumb and top joint of the forefinger, and draw the string to the mouth with the middle and third finger." As Mr. Man in this description does not speak of the forefinger as bent and

[1] On the Aboriginal Inhabitants of the Andaman Islands. By Edward Horace Man. Reprinted from the Journal of the Anthropological Institute of Great Britain and Ireland.

pressed against the arrow, the release practiced by these people must be the tertiary release.

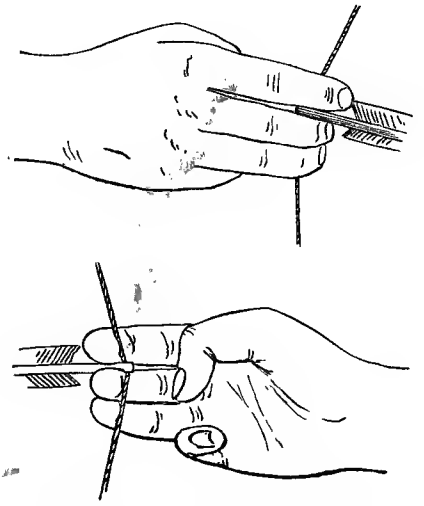
We have thus far considered three methods of release, of which the thumb and bent forefinger appressed forms the simplest and probably one of the earliest forms; and this we have called the primary release. The secondary release differs only in the application of the tips of the second finger, or second and third fingers, to the string, and must be regarded as a development of the primary release, though forming a distinct method. The third release differs in the position of the forefinger, which, instead of being bent and pressed against the arrow, is nearly straight, its tip, as well as the tips of the second and sometimes that of the third finger, engaging the string. This constitutes the tertiary release.

We come now to consider a release which by documentary evidence has been in vogue among the northern Mediterranean nations for centuries, and among the southern Mediterranean nations for tens of centuries. It is the oldest release of which we have any knowledge. It is practiced to-day by all modern English, French, and American archers, and is the release practiced by European archers of the Middle Ages. This release consists in drawing the string back with the tips of the first, second, and third fingers, the balls of the fingers clinging to the string, with the terminal joints of the fingers slightly flexed. The arrow is lightly held between the first and second fingers, the thumb straight and inactive.

Since this release has been practiced by the Mediterranean nations from early historic times, it may with propriety be called the *Mediterranean release*. The following figures (Figs. 8 and 9) illustrate this form of release.

In the practice of this release, the attrition of the string on the fingers is so severe that a leather glove or leather

finger-tips are worn, though some archers are enabled by long service to shoot with their fingers unprotected. Roger Ascham, in his "Toxophilus," written in 1544, says: "A shootinge glove is chieflye for to save a man's fingers from hurtinge, that he may be able to beare the sharpe stringe to the uttermoste of his strengthe. And when a man shooteth, the might of his shoote lyeth on the foremost finger, and on the ringman; for the middle



Figs. 8 and 9. Mediterranean release.

finger which is longest, like a lubber, starteth back, and beareth no weight of the stringe in a manner at all; therefore the two fingers must have thicker leather, and that must have thickest of all whereon a man lowseth most, and for sure lowsinge the foremost finger is most apt, because it holdeth best, and for that purpose nature hath, as a man would say, yocked it with the thoumbe."

Hansard, in his "Book of Archery," states that the Flemings use the first and second fingers only, a method adopted by some English bowmen. This Fleming variety of the

Mediterranean release, as we shall soon see, was probably the usual form in the Middle Ages. Among the many curious matters of interest concerning archery, which may be found in Hansard's book, is the description of a quaint black-letter volume which the author dug out in the Royal Library of Paris. This volume was written at the close of the thirteenth or beginning of the fourteenth century. It is entitled "The Book of King Modus," and is a treatise on the use of the bow in hunting. Among other matters is a chapter of "Instructions in the Art of Archery;" and in regard to the release, it says that "you draw the arrow with three fingers, holding the nock between the forefinger and the next thereto."

Associated with this release is the necessity of placing the arrow on the left of the bow held vertically. This position is necessitated by the fact, that as the string is pulled back the friction of the fingers which clutch the arrow tends to swing the arrow to the right; at the same time the friction of the fingers on the string causes the string to rotate somewhat to the right, and this tends to displace the arrow.

In a release of this nature, the arrow must be to the left of the bow vertical; and carved figures, manuscript drawings, and sculpture, in which the arrow is represented otherwise in connection with the Mediterranean release, must be incorrect. This release is unquestionably an advance on the others thus far described, as it enables the drawing of a stiffer bow, and is exceedingly delicate and smooth at the instant of loosing the arrow.

Mr. John Murdock, who accompanied the United States Signal Survey Expedition to the northwest coast of Alaska, has kindly furnished me the information that the Eskimo of Point Barrow practice the Mediterranean release, using, however, only the first and second fingers in drawing the string. I am also indebted to Mr. Mur-

dock for calling my attention to two other references concerning the practice of archery among these Arctic people.

Mr. Ludwig Kumlien, naturalist of the Howgate Polar Expedition, says of the Cumberland Sound Eskimo, "In shooting this weapon the string is placed on the first joint of the first and middle fingers of the right hand."[1]

The Krause brothers state that the natives of East Cape, Siberia, do not hold the arrow between the thumb and first finger, but between the first and middle fingers.[2]

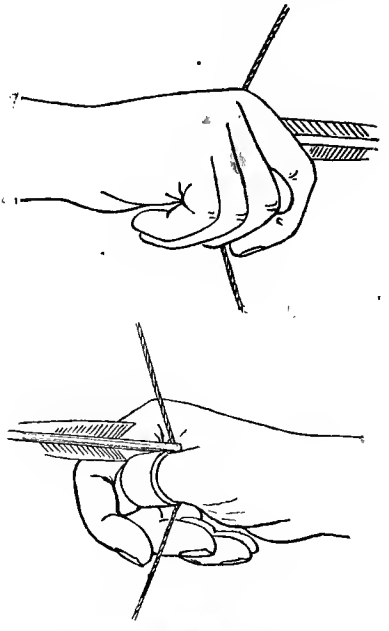
Neither of these descriptions is complete, and yet both indicate unmistakably the Mediterranean release. It was somewhat surprising to find this release among the tribes of Eskimo, for I had supposed that the arrow-release of this people would be either in the form of the primary or secondary release. As a confirmation of this unlooked-for method of shooting among the west-coast

Fig. 10. Point Barrow Eskimo arrow, half size. *a*, end view.

Eskimo at least, Mr. Murdock called my attention to the shape of the nock end of their arrow, which was greatly flattened at right angles to the nock, so that it offered greater convenience for grasping between the fingers. It is possible also that this peculiar flattening may have something to do with the flight of the arrow. This flattening of the arrow I have never observed before; and an arrow of this shape must indicate unmistakably the method of release employed, for in no other form of release with which I am familiar could the arrow be discharged. Fig. 10 gives the appearance of this arrow.

[1] Bulletin of the U. S. National Museum, No. 15, p. 37.
[2] Deutsche geographische Blätter, Vol. I, p. 33.

If Mr. Man's information be correct, then the tribes inhabiting the Little Andaman practice the Mediterranean release. In his work on the Andaman Islanders before alluded to, the author says (p. 141) that the Jär'awa, or the tribes which inhabit the Little Andaman and southern portions of the Great Andaman, "adopt the plan usual among ourselves of holding the nock of the arrow inside the string by means of the middle joints of the fore and



Figs. 11 and 12. Mongolian release.

middle fingers, and drawing the string with the same joints."

While the four releases thus far described may be considered successive modifications of each other, though I do not mean to imply that they are so necessarily, the release which we are about to examine is an entirely independent form, having no relation to the others. In this release the string is drawn by the flexed thumb bent over

the string, the end of the forefinger assisting in holding the thumb in this position. Figs. 11 and 12 illustrate this release. The arrow is held at the junction of the thumb and forefinger, the base of the finger pressing the arrow against the bow. For this reason the arrow is always placed to the right of the bow vertical.

This release is characteristic of the Asiatic races, such as the Manchu, Chinese, Korean, Japanese, Turk, and doubtless other cognate peoples. The Persians also practice this release, which they probably acquired from their proximity to, and association (friendly and otherwise) with, Asiatic people of past times.

As this release is practiced almost exclusively by Mongolian nations, it may be called the *Mongolian release*.

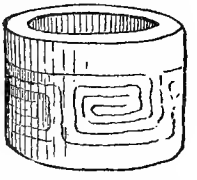


Fig. 13.
Chinese thumb-ring.

In this release the thumb is protected by a guard of some kind. With the Manchu, Chinese, and Turk, as well as with the Persian, this guard consists of a thick ring, which is worn near the base of the thumb. The thick edge of the ring is brought to bear upon the string as it is drawn back, and at the same time the string is quickly released by straightening the thumb. The ring may be made of any hard material, such as horn, bone, ivory, quartz, agate, or jade. These rings are often very expensive. I was shown one in Canton that was valued at three hundred dollars. Fig. 13 illustrates an ordinary horn ring such as the Cantonese use.

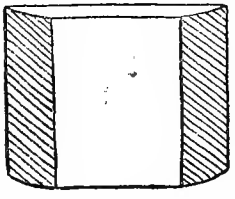


Fig. 14.
Chinese thumb-ring of jade, in section.

Fig. 14 shows a Chinese thumb-ring in section, made of jade. This ring, being used with bows having thicker strings, is correspondingly larger. The Korean thumb-ring is quite unlike that used by the Chinese, as will be seen

by Fig. 15. The ring is thin, and from its shape is evidently used to protect the ball of the thumb. The string is not engaged by the edge of the ring, as in the Chinese

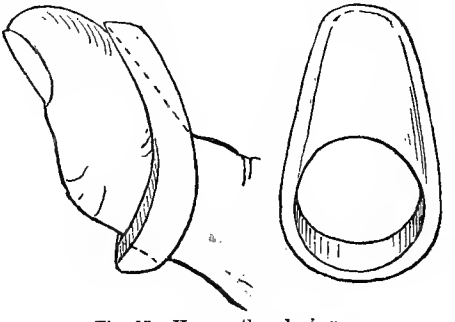


Fig. 15. Korean thumb-ring.

method, but rests upon the side of the ring.[1] The Japanese archer, instead of using a thumb-ring, is provided with a

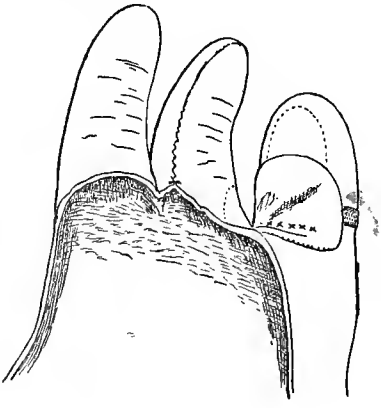


Fig. 16. Japanese archer's glove (portion only shown).

glove consisting of thumb and two fingers. The wrist of the glove is firmly bound to the wrist by a long band,

[1] I was told by a Korean ambassador in Tokio, that in archery the Koreans are taught to draw the arrow with either hand, but considered the left hand most efficient. In illustrating the method of release he drew the arrow with his left hand. The bow is firmly grasped, and an arm-guard is worn.

which is fastened to one flap, passes through a hole in the opposite flap, thus enabling it to be pulled up like a noose, and then is wound tightly about the wrist several times. The thumb of the glove is much thickened, and is very hard and stiff (Fig. 16). Its operation is like that of the Korean thumb-ring.

In the Korean and Japanese practice the first and second fingers assist in holding the thumb bent on the string, while in the Manchu release only the first finger is so

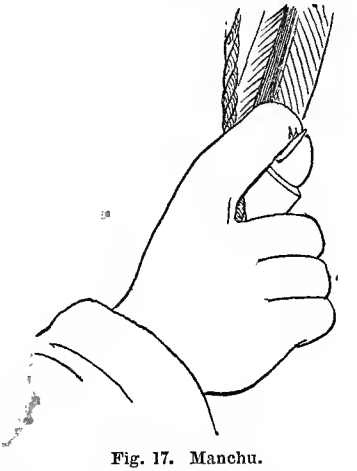


Fig. 17. Manchu.

used, the other three fingers being inactive and closed. There are, doubtless other modifications of this release; the essential features however remain the same.

A young Japanese from the north of Japan, in illustrating to me his method of release, drew the string back with the thumb and interlocked forefinger as already described, and assisted the drawing back of the string with the tips of the second and third fingers, as shown in the *secondary release*.

The accompanying figure illustrates the attitude of the shaft hand of a Manchu as seen from above, which I sketched from a Manchu soldier at Canton. (Fig. 17.) The

Persians and Turks use the thumb-ring in the same way. Fig. 18, representing the Persian thumb-ring, is copied from a drawing given in Meyrick's "Ancient Armour." Hansard, referring to another author, says that "one of the early Turkish Sultans occupied his leisure in manufacturing these rings," distributing them as presents among his favorite pashas; and adds also that the carnelian thumb-rings may be easily procured in the Bazäars of Constantinople.

Some notes in regard to Persian archery may be found in "Hansard's Book of Archery," p. 136.

The "Archers' Register" published a number of notes from a manuscript copy of "Anecdotes of Turkish Archery procured from Constantinople by Sir Robert Ainslie, and translated by his interpreter, at the request of Sir Joseph Banks, Baronet, 1797," from which we quote:—

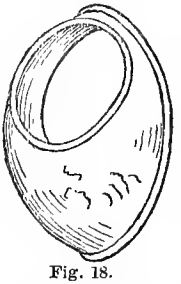


Fig. 18.
Persian thumb-ring.

"The bow, instead of being drawn with three fingers on the string, according to our mode, was drawn by the right thumb, with the arrow placed on the string immediately above it. A thumb-piece, or guard of bone, answering the purpose of our 'tips,' was worn. It covered the ball of the thumb, one end being made as a ring and passed over the joint. A projecting tongue in the inside prevented the string slipping off the guard into the angle of the thumb formed by the bent joint. The inside of the guard was lined with leather. A curious contrivance, consisting of a horn-groove several inches in length, fixed on a foundation of wood attached to a leather strap and buckle, was fastened on the bow-hand. The groove projected inwards. The arrow was laid in this groove, which rested on the thumb, and was rather higher on the outside, as the arrow was shot on the right side of the bow, on the contrary side to what it is in England."

There are doubtless other forms of release, but those already given probably comprise the principal and most efficient ones.

At Singapore I was enabled to secure, through the kindness of D. F. A. Hervey, Esq., of Malacca, a Malay release of the Temiang tribe, originally from Sumatra. The bow was held in an horizontal position (a hole being made in the centre of the bow through which the arrow passed), the three fingers bent over the string, and the arrow held between the first and second fingers, the thumb straight-

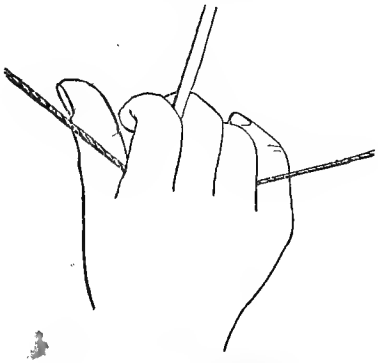


Fig. 19. Temiang release.

ened, and the little finger partially straightened and bearing against the string as in the figure (Fig. 19). This was a weak release, and was used only in the shooting of small game and fish. An entirely different form of release is used by this people in shooting fire at the spirit of sickness. The bow is perforated as in the bow above mentioned; the arrow has a shoulder near the distal end which prevents it passing through the hole, and the nock is fastened to the string. A ball of inflammable material is loosely placed on the end of the arrow, and when the arrow is released it is suddenly checked by its shoulder striking

the bow and the fire-ball is projected into the air by its momentum. The release in this act is shown in Fig. 20.

The first finger passes above the string and under the arrow, the thumb being straightened and the arrow grasped between the thumb and finger. This is a most awkward and inefficient release; and as the descriptions of this and the previous Malay release were given me by an old man, who was at the time being questioned by Mr. Hervey in the interest of philology, it is possible that the releases may have been incorrectly described.

The releases thus far given comprise those forms which have been studied from life.

It now remains for us to examine the releases of ancient

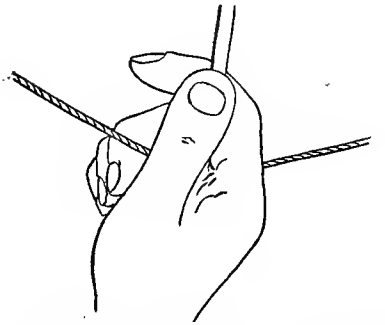


Fig. 20. Temiang release when shooting at spirit of sickness.

peoples which are made known to us through illuminated manuscripts, frescos, rock sculpture, and other graphic methods. From the conventional way in which many of these are depicted, great difficulty is encountered in properly interpreting the exact method of release intended. In many cases, especially in certain forms of the ancient Egyptian, as shown in the frescos, and early Grecian, as represented on their decorative vases, it is well nigh impossible to recognize any mode in which the arrow could be drawn. In some cases the release might be intended

to represent either of two or three kinds. That many releases are represented incorrectly there can be no doubt. In figures of Egyptian archers, the hand is depicted as daintily pulling the arrow in a way that could not possibly accomplish the drawing of a stiff bow; and that the Egyptian archer used a stiff bow is seen in the vigorous manner in which he is represented as bracing it with knee pressed against its middle, while tying the cord above.

It will be best, however, to give a description of those releases that can be clearly interpreted, beginning with the Assyrian. I had a brief opportunity of studying the wonderful collection of Assyrian slabs at the British Museum, and also the Assyrian collections at the Louvre. In the various scenes of war and hunting so graphically depicted, the most perfect representations of archers in the act of drawing the bow are given.

At the outset I met with a very curious and unaccountable discrepancy in the form of release employed, and that was when the archer was represented with his right side, or shaft hand, toward the observer, the hand was with few exceptions in the attitude of the primary or secondary release; whereas if the archer was represented with his left side, or bow hand, toward the observer, the release with few exceptions represented the Mediterranean release. Or, in other words, as one faces the sculptured slab the archers, who are represented as shooting towards the right, show with few exceptions either the primary or secondary release, while those shooting towards the left are with few exceptions practicing the Mediterranean release!

If in every case the Assyrians were represented on the left, as one faces the tablet, fighting the enemy on the right, then one might assume that the enemy was practicing a different release. In an Egyptian fresco, for ex-

ample, where Rameses II. is depicted in his chariot fighting the Arabs, the enemy is represented as practicing a different release. While in many cases the Assyrians are on the left of the picture, in other cases they are on the right, and shooting towards the left. It is therefore difficult to decide which release was practiced by them; and all the more so, since, with very few exceptions, the releases are perfect representations of forms practiced today, which have already been described. I have suspected that in one or two cases the Mongolian release might have been intended, though in no case is the thumb-ring represented, though other details of arm-guards, bracelets, etc., are shown with great minuteness.

Taking the releases as they are represented in the sculpt-

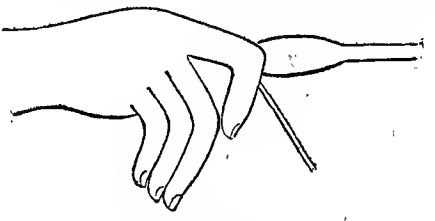


Fig. 21. Assyrian.

ures without regard to the discrepancies above noted, it is an extremely interesting fact that all the earlier Assyrian archers, that is, of the time of Assurnazirpal, or 884 B. C., the release represented is the primary one, as shown in Fig. 21; while in the archers of the reign of Assurbarnipal, or 650 B. C., the secondary release is shown, or a variety of it, in which the tips of all three fingers are on the string, as shown in Fig. 22. Between these two epochs the sculptures ranging from 745–705 B. C., notably a slab representing the campaign of Sennacherib showing assault on the Kouyunjik Palace, both the primary and secondary releases are represented. If any reliance can

be placed on the accuracy of these figures, an interesting relation is shown in the development of the secondary from the primary release, as urged in the first part of this paper. Possibly a proof that the primary release is in-

Fig. 22. Assyrian.

tended is shown in the fact that the arrows are represented with the nock end bulbous.

On tablets in the British Museum of this intermediate age, or during the reign of Tiglath Pileser, is the first representation of an archer with the right side towards the

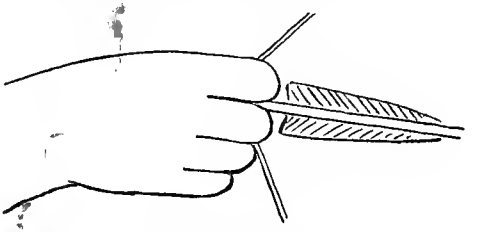


Fig. 23. Assyrian.

observer practicing the Mediterranean release; and on slabs of the date of 650 B. C., one showing Assurbarnipal's second war against Elam, and another one representing the siege of the city of Al-ammu, a number of archers with their right towards the observer are practicing the Mediterranean release (Fig. 23). In the Mediterranean release, which, as I have before remarked, is represented,

with few exceptions, by all the archers having the bow-hand towards the observer, there are two varieties shown; one in which three fingers are on the string, and another

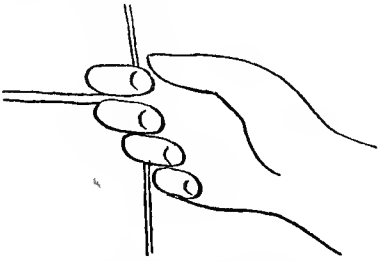


Fig. 24. Assyrian.

with only two fingers drawing the bow, as shown in the accompanying figures (Figs. 24, 25). The Mediterranean release occurs in Assyrian sculpture as early as 884

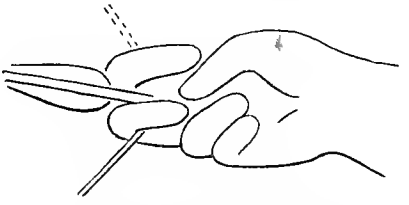


Fig. 25. Assyrian.

B. C., as shown on a marble slab in the British Museum representing the siege of a city by Assurnazirpal (Fig. 26). A curious form is shown in Fig. 27, showing Assur-

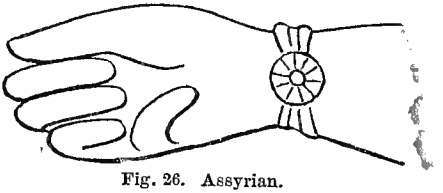


Fig. 26. Assyrian.

barnipal in a chariot, shooting lions. The string below is concealed by the archer's arm. The secondary release is probably intended.

In regard to the bow-hand, the thumb is sometimes represented as straight and guiding the arrow, and in other cases as braced inside of the bow. In this connection it may be interesting to note that in the earliest Assyrian bows the ends of the bows are straight and blunt, the nocks being a simple groove and the string being tied

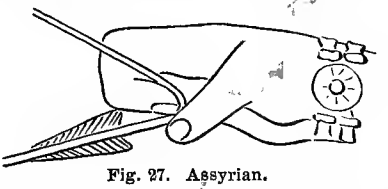


Fig. 27. Assyrian.

whenever the bow is braced, as in certain modern Indian and Aino practice. Other bows are shown at this period with a nock somewhat oblique, and it is possible that the string might have been looped and slipped into the notch, as in the modern English bow.

In the later slabs, that is 650 B.C., the ends of the bow are shown abruptly bent, the bent portion in some cases

Fig. 28.

Fig. 29.

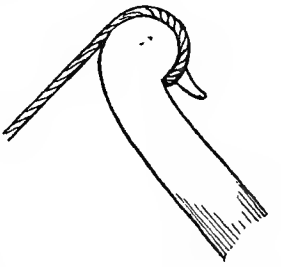


Fig. 30.

being carved to represent a bird's head. In the bracing of this bow the string has a permanent loop, and the assistance of a second person is required to slip this loop over the point of the nock while the archer is employed in bending the bow, which is done by drawing the ends of the bow towards him, the knee at the same time being pressed in the middle of the bow. (Figs. 28, 29, 30.) In

the earlier reign, the arrows are shown with larger nocks and the barbs, long and narrow, with their outer edges generally parallel to the shaft. The nock end of the arrow is bulbous, as before remarked; and if this is correctly represented it would settle the question as to the primary release being the one intended. In the later slabs, the arrow has shorter barbs, with the feathers tapering forward towards the point, and the nock end of the arrow is not bulbous.

A more careful study than I was able to give to these sculptures may probably modify the general statements here made concerning the variations in time of the bow and arrow.

Concerning the practice of archery among the ancient Egyptians, Wilkinson in his classical work mentions only two forms of release. He says their mode of drawing the bow was either with the thumb and forefinger or with the first and second fingers.[1] Rawlinson makes the same statement.[2] These two forms as defined by these authors would be the primary and Mediterranean releases.

If the representations of the drawings and frescos in ancient Egyptian tombs, as given by Rosallini, Lepsius, and others, are to be relied on, then the ancient Egyptians practiced at least three, and possibly four, definite and distinct methods of release.

That many of the releases depicted in these old sculptures and frescos are conventional simply, there can be no doubt; indeed, some of the releases are plainly impossible, notably that form which shows the archer daintily drawing back a stiff bow with the extreme tips of the first two fingers and thumb. Again, the figure of Rameses II. (see

[1] Manners and Customs of the Ancient Egyptians, 2nd series, Vol. I., p. 207.
[2] History of Ancient Egypt, Vol. I., p. 474.

Wilkinson, Vol. I., p. 307), which shows the bow vertical while the shaft-hand is inverted, that is, with palm uppermost, is an equally impossible attitude. Other releases identify themselves clearly with forms already described, and with slight latitude in the interpretation of the conventional forms we may identify these as belonging to known types.

The earliest releases are those depicted on the tombs of Beni Hassan of the time of Usurtasen I., which according

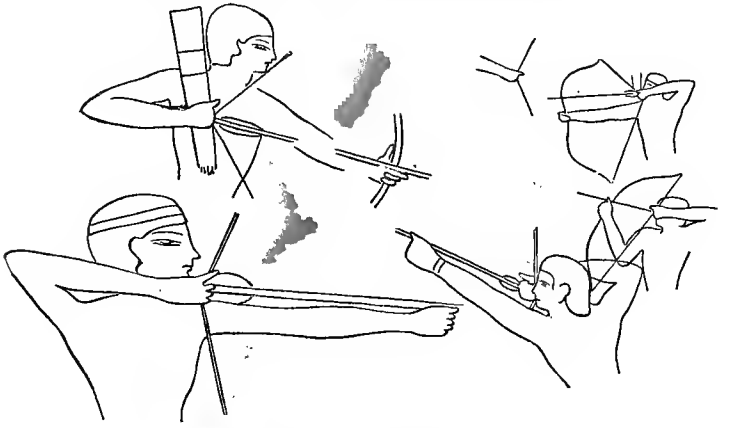


Fig. 31. Early Egyptian.

to the conservative chronology of Professor Lepsius dates 2380 B.C. Here the Mediterranean release is unmistakably shown. The following figure (Fig. 31) from these tombs, copied from Rosallini's great work, indicates this form of release in the clearest manner. In these figures it is interesting to observe that the arrow is drawn to the ear, and also that the archers are represented as shooting with the left as well as with the right hand.

Making a stride of over a thousand years and coming down to the time of Seti I. (1259 B.C.), we have represented a release as well as a mode of drawing the arrow above and

behind the ear, which recalls in the action of the arm certain forms of the Mongolian release. (Fig. 32.) It is true the attitude of the hand might be interpreted as representing the thumb and bent forefinger as shown in the

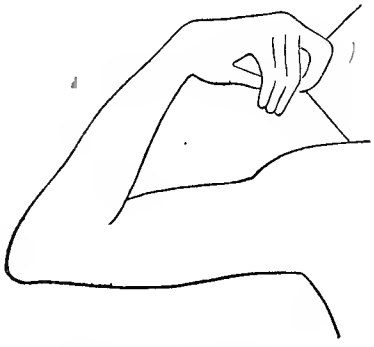


Fig. 32. Egyptian. Seti I.

primary release, but the free and vigorous drawing of the bow as shown in the figure could not possibly be accomplished in the primary form with a bow of any strength. Furthermore, the attitude assumed by the Manchu and

Fig. 33. Egyptian. Rameses II.

Japanese archer in the Mongolian release vividly recalls this picture of Seti. Egyptologists state that Seti I. was occupied early in his reign with wars in the east and in resisting the incursions of Asiatic tribes; and we venture to

offer the suggestion that during these wars he might have acquired the more vigorous release as practiced by the Asiatics.[1] Whatever may be the method depicted in the drawing of Seti, it is quite unlike the releases of the time of Usurtasen, and equally unlike the figures of Rameses II., which are so often portrayed.

In Figs. 33, 34, copied from Rosallini, the thumb and the forefinger partially bent may be intended to represent the primary release, as in no other way could be interpreted the bent forefinger and straightened thumb holding

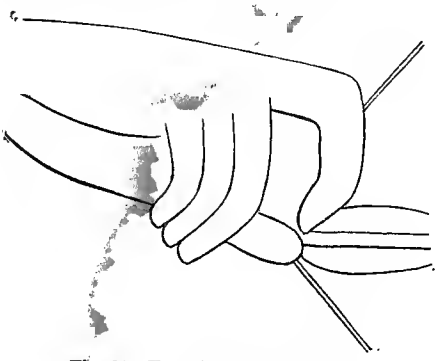


Fig. 34. Egyptian. Rameses II.

the tip of the arrow, with three other fingers free from the string.

In the British Museum are casts of a hunting scene, and also of battle scenes of the time of Rameses II., in which the shaft-hand of the archer is in an inverted position. This form of release associated with a vertical bow is an impossible one. Either the hand is wrongly drawn, or the attitude of the bow is incorrectly given. The only explanation of this discrepancy is the assumption that the bow was

[1] It would be extremely interesting to know whether any object answering the purpose of a thumb-ring has ever been found among the relics of ancient Egypt.

really held in an horizontal position, and the release practiced was the one I have designated as the tertiary release. The Egyptian artist, ignorant of perspective drawing and utterly unable to represent a bow foreshortened, has drawn the bow in a vertical position. As a further proof of this, we find that the tribes of North American Indians and the Siamese who practice the tertiary release usually hold the bow in an horizontal position. An examination of the accompanying figures will make this clear. Fig. 35 is copied from the cast referred to in the British Museum; Fig. 36, from Wilkinson, Vol. I., p. 307; Fig. 37, from Wilkinson, Vol. I., p. 309. Reginald Stuart Poole, Esq., of the British Museum, has kindly sent me an outline of the nock end of the ancient Egyptian arrow which shows a straight and

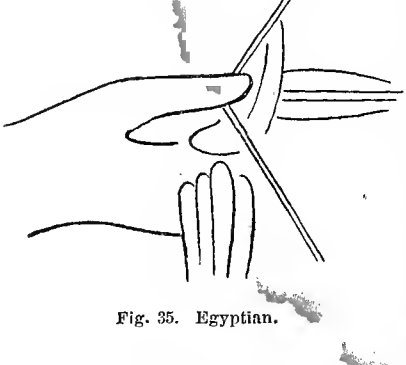


Fig. 35. Egyptian.

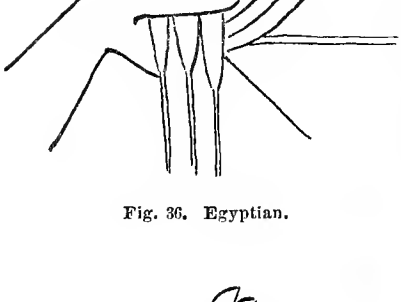


Fig. 36. Egyptian.

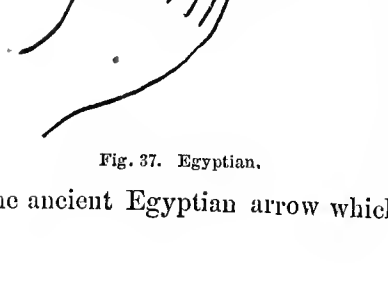


Fig. 37. Egyptian.

cylindrical shaft. Figs. 38, 39, 40, and 41 are copied from Rosallini. Fig. 38 is probably intended for the primary, Fig. 39 the tertiary probably, and Figs. 40 and 41 the Mediterranean form.

Turning now to the practice of archery among the ancient Grecians, we should expect to find among these peo-

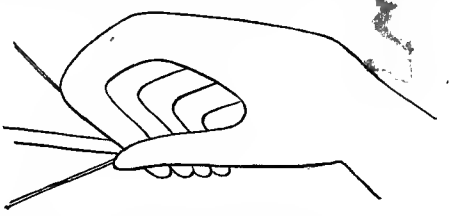


Fig. 38. Egyptian.

ple, at least, the most distinct and truthful delineations of the attitude of the hand in shooting. Hansard, in his "Book of Archery," p. 428, says of the ancient Greek archers, "Like the modern Turks, Persians, Tartars, and many other Orientals, they drew the bow-string with their thumb, the arrow being retained in place by the forefinger. Many

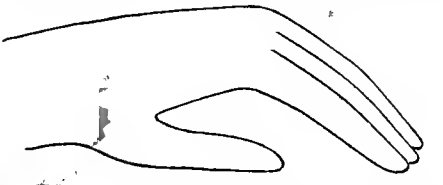


Fig. 39. Egyptian.

sculptures extant in public and private collections, especially those splendid casts from the Island of Egina now in the British Philosophical and Literary Institution, represent several archers drawing the bow-string as I have described."

A study of a number of ancient Grecian releases as shown in rock sculpture and on decorated vases reveals only one release that might possibly be intended to represent the Mongolian method, and this is shown on a Greek

vase (black figures on red) figured in *Auserlesene Vaser-bilder*. With this exception the releases thus far examined are as various, and many of them quite as enigmatical, as those seen among the ancient Egyptians. I puzzled for a long time over these sculptures from the temple of

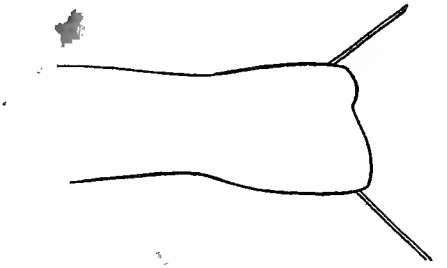


Fig. 40. Egyptian.

Athena to which Mr. Hansard refers, and was forced to come to the conclusion that, despite their acknowledged accuracy, the release was an impossible one. It was not till sometime after that I learned that the figures had been carefully restored by Thovaldsen, and the restored parts com-

Fig. 41. Egyptian.

prised the hands and arms, as well as the extremities of most of the figures. With this information I had occasion to hunt up a history of these figures, and found the following in a work by Eugene Plon entitled "Thovaldsen his Life and Works," republished in this country by Roberts Brothers. The figures were restored by Thovaldsen in 1816. Among the restored parts were the hands of the archers. "The statues were in Parian marble, and he used so much

care in matching the tints of the new pieces as almost to deceive a practiced eye. He was frequently asked by visitors to the Atelier which were the restored parts. 'I cannot say,' he would reply laughing; 'I neglected to mark them, and I no longer remember. Find them out for yourself if you can'" (p. 56). Of these restorations, however, it is possible that Mr. Hansard was not aware, though if he had ever attempted drawing a bow in the manner represented in these figures, he would have seen the absurdity as well as the impossibility of the attitude; and, furthermore, had he been at all familiar with the Mongolian release he would have seen that there was really no approach to the form as employed by the Manchu, Korean, Japanese, or Turk. The following figure (Fig. 42) is sketched from the set of casts in the Museum of Fine Arts in Boston. An examination of these

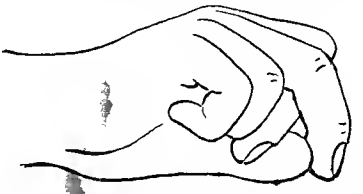


Fig. 42. Thovaldsen's restoration of hand.

figures will show that the angle made by the shaft-hand in relation to the bow-hand is also inaccurate. A release that might at first sight suggest the Mongolian form is shown in the accompanying figure (Fig. 43) representing an Amazon archer, which is painted on a Greek vase of the 4th century B.C. The forefinger seems to be holding the end of the thumb, but the thumb is not hooked over the string as it ought to be. If the hand be correctly drawn it represents quite well the tertiary release; and this supposition is borne out by two sculptures, one from the Temple of Apollo Epicurius at Phigalia (Fig. 44), and another from

Lycia, Asia Minor. (Fig. 45.) In these two examples the hand seems to be in the attitude of drawing the bow, with the fingers partially bent on the string, and the thumb

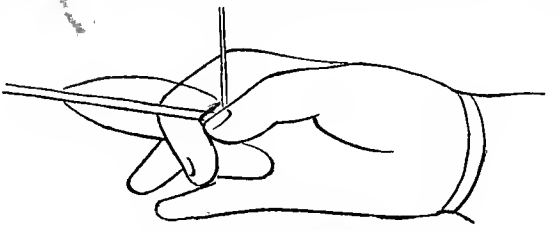


Fig. 43. Amazon archer.

assisting in holding the arrow; and this is the form of the tertiary release.

The earliest Greek release that I have seen is represented

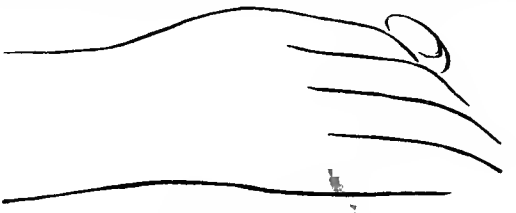


Fig. 44. Phigalia.

on a block of stone sent to this country by the Assos Exhibition, and now the property of the Boston Museum of Fine Arts. It is supposed to date about 2200 B. C.

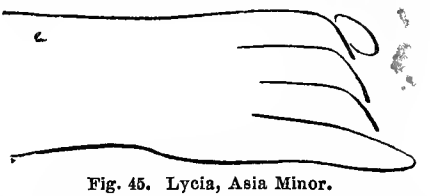


Fig. 45. Lycia, Asia Minor.

In this figure the hand is vigorously grasping the string, with the first and second fingers abruptly bent, the third and fourth fingers apparently having been broken away. (Fig. 46.)

If this release really represent a permanent form of shooting, then this form should have been designated the primary release; but, so far as I have learned, it seems to be a temporary mode resorted to only under special conditions. In testing the stiffness of a bow, for example, the string is grasped in this manner. An instance of this is seen on one of the Assyrian slabs, where the king is represented as trying a bow. I was informed by a Zuñi chief that when shooting in a great hurry the string was vigorously clutched by three or four fingers, the arrow being held against the first finger by the thumb.

The Ainos on the west coast of Yezo also informed me

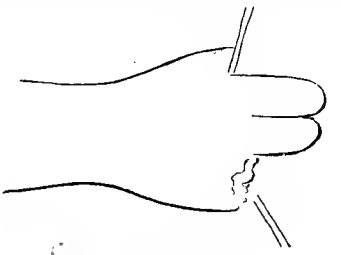


Fig. 46. Assos.

that when shooting in great haste the string was clutched in precisely this manner. In the use of a bow of any strength, the attrition of the string on the fingers must be very severe; and only a hand as tough, and as thoroughly calloused as the paw of an animal, could endure the friction of the string in such a release. For convenience of reference this form may be referred to provisionally as the *Archaic release*.

In a bas-relief in marble representing Herakles drawing a bow, a figure of which is given in Rayet's *Monuments de l'Art Antique*, it is rather curious that the hand is represented as clutching the string in the vigorous manner just described. The date of this work is put down as the fourth or fifth century B. C. Doubts have been expressed

as to the genuineness of this work. Dr. Alfred Emerson has expressed his belief in the "American Journal of Archæology," Vol. I., p. 153, that the work is a modern fraud. In the following number of the Journal Mr. Furtwängler defends the work, but would place it not earlier than the first century B. C. He says it is not ar-

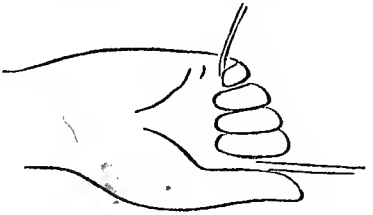


Fig. 47. Grecian.

chaic, but archaistic. Whether the work be genuine or spurious I am not competent to judge. I may venture to say, however, that the attitude of the shaft-hand is very inaccurate. However absurd the drawing of the hand often is in these early Greek releases, the artists have rarely failed to adjust the arrow correctly in relation to

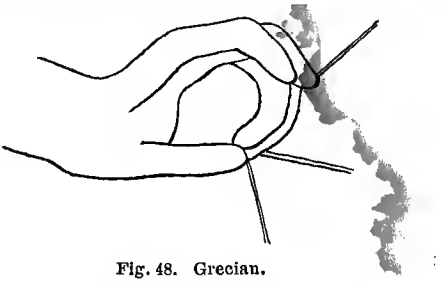


Fig. 48. Grecian.

the bend of the bow and the angle made by the string in tension. In this bas-relief of Herakles, however, the attitude of shooting is one of which no artist capable of making so robust and correct a body and pose would be guilty, and it certainly lends some weight to the supposition of Dr. Emerson as to the possible character of the work.

The accompanying figures are interesting as showing the conventional and even grotesque ways in which the arrow release is often represented on early Grecian vases. Figs. 47 and 48 are copied from *Weiner Vorlage Blätter*, Series D, Taf. IX, XII. Fig. 47 shows the hand reversed, with the thumb below instead of above. It is possible to shoot an arrow in this way but hardly probable that so awkward and unnatural an attitude would be taken. This release is intended to represent the tertiary release. Fig. 48 as drawn is an impossible release, though this release also may be intended to represent the tertiary release, the thumb being straight, and the arrow being held between

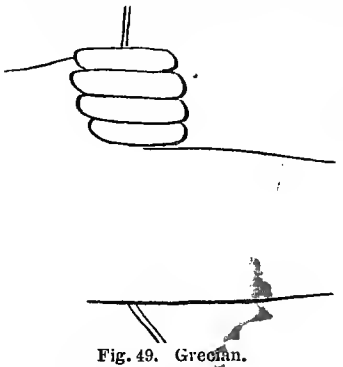


Fig. 49. Grecian.

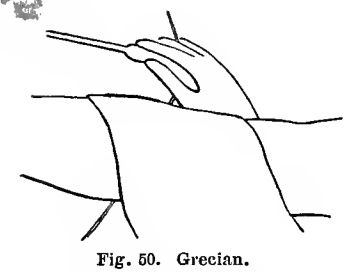


Fig. 50. Grecian.

the thumb and forefinger, while the second finger, and in Fig. 48 the second, third, and fourth fingers are on the string.

In *Monuments Inedits.*, Vol. I., Plate LI., is figured the famous Chalcidian or Achilles vase, supposed to have been made in the early part of the sixth century B. C. Here the archer is shown left-handed. Assuming the drawing to be correct, the release represents the archaic form (Fig. 49).

Another release figured in the same volume, Plate XX., may be intended to represent the tertiary release (see Fig. 50). On Plate L., Vol. II., of the same work is fig-

ured a Grecian vase of the fourth century B. C., on which are depicted two releases which are probably the tertiary form (Fig 51). On Plate XVIII. of the same volume is figured an archaic Etruscan vase on which a curious de-

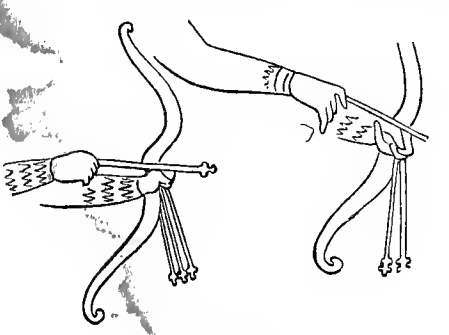


Fig. 51. Grecian.

lineation of an archer is given. The bow-hand is so well drawn that one is almost inclined to imagine that some mechanical device for releasing the arrow is intended by the curious representation of the shaft-hand (Fig. 52). Three other curious releases are shown in Figs. 53, 54 and

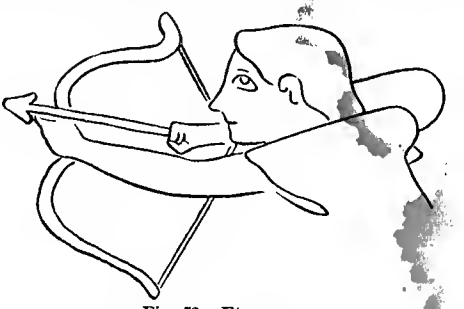


Fig. 52. Etruscan.

55, the latter copied from a Greek vase (black figures on red) supposed to be of the sixth century B. C. All these, though incorrectly represented, are probably intended for the tertiary release. Fig. 56 is copied from a figure given in *Auserlesene Vaserbilder*, representing a Greek vase of

the sixth century B. C. In this the archer's hand most certainly suggests the Mongolian release. It is true the thumb is not bent on the string, but it is bent with the second and presumably the first finger pressing against it.

Concerning ancient Persian releases, only two have fallen

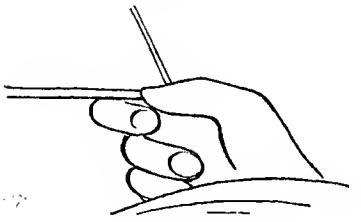


Fig. 53. Grecian.

Fig 54. Grecian (bas-relief).

under my notice. One is preserved on a silver cup of the Sassanid Dynasty, fifth century B. C. This is figured in *Monuments Inedits.*, Vol. III., Plate 51. In this figure the bow is a typical Manchu. The release is unquestionably a variety of the Mongolian release, the second and

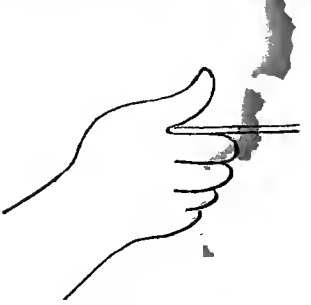


Fig. 55. Grecian.

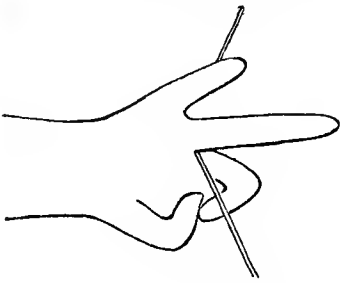


Fig. 56. Grecian.

third fingers aiding the thumb, while the index finger is straight and inactive. The hand has attached to it a curious gear of leather, apparently held by a band about the wrist. Whether this suggests a finger- and thumb-

guard similar to that used by the Japanese it is difficult to determine. (Fig. 57.)

In the Journal of the Royal Asiatic Society of Bengal, Vol. VII., Part I., p. 258, 1883, is a communication from Major General A. Cunningham, entitled "Relics from Ancient Persia in Gold, Silver, and Copper." These objects were found on the northern bank of the Oxus. Judging from the coins, the author regards the deposit as having been made not later than 180 or 200 years B. C. Among the relics was a stone cylinder, upon which were represented two Persian soldiers capturing two Scythians. The representations of the hands are too imperfect for one to judge with any precision of the character of the release intended. The attitude of the hand in every case, however, suggests the Mongolian release. The bow is short, and of a form similar to the Manchu bow of to-day. It is interesting to notice that the Scythians are represented as shooting left-handed, and in this connection to recall the advice which Plato gives in regard to archery,—that both hands should be taught to draw the bow, adding that the Scythians draw the bow with either hand.

Fig. 57. Persian.

In regard to Chinese archery in ancient times, the classics of China abound in allusions to archery, and there can be no doubt that the release as practiced to-day is identical with the release practiced three thousand years

ago. The Analects of Confucius, the Doctrine of the Mean, and other ancient writings bear ample testimony to the high esteem in which this manly art was held.

In the Shi King, or book of aucient Chinese poetry (translation of Legge), the following allusions refer to the use of the thumb-ring, which was also called a thimble, and also a *pán chí*, or finger regulator.

"With archer's thimble at his girdle hung."

And again,—

"Each right thumb wore the metal guard."

Concerning Japanese archery methods in past times,

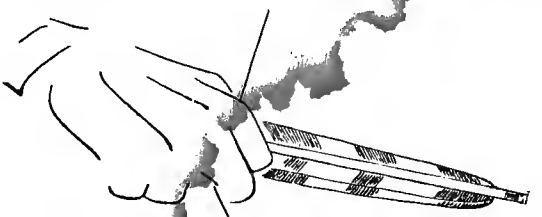


Fig. 58. Japanese.

what little evidence we have on the subject points to a Mongolian form of release. The archers have always formed a favorite study for the Japanese artist, and many details of the bow and arrow and attitudes of the archer may be got from old paintings and drawings. The representations of the hand in shooting, though often drawn conventionally, are easily interpreted as releasing the arrow after the Mongolian method. Fig. 58 is copied from a vigorous drawing, showing the attitude of the shaft-hand in the attitude of release. In the Shinto temple at Miyajima is a picture over two hundred years old, in which the archer's hand is shown in the attitude of the

Mongolian release. A picture of Tanniu, painted one hundred and fifty years ago and supposed to be a copy of a Chinese subject six or seven hundred years old, shows plainly the Mongolian release. In a picture by Keion, seven hundred years old, the archer is represented in the act of wetting with his tongue the tips of the first two fingers of his hand; and this certainly suggests the Japanese form of the Mongolian release.

Among the Emperor's treasures at Nara is a silver vessel supposed to be of the time of Tempei Jingo (765 A. D.), upon which is depicted a hunting-scene. Here the release, if correctly depicted, suggests the Mediterranean form. The bow is Mongoloid. The vessel is probably Persian: it is certainly not Japanese. The earliest allusions to Japanese archery are contained in "Kojiki, or Records of Ancient Matters," of which its translator, Mr. Basil Hall Chamberlain, says: "It is the earliest authentic literary product of that large division of the human race which has been variously denominated Turanian, Scythian, and Altäic, and even precedes by at least a century the most ancient extant literary compositions of non-Aryan India." These records take us back without question to the 7th century of our era. In this work allusion is made to the *heavenly feathered arrow*, to the *vegetable wax-tree bow* and *deer bow*, and also to the *elbow pad*. It is difficult to understand the purpose of the elbow pad in archery, assuming the same practice of the bow in ancient times as in present Japanese methods. It is difficult to believe that a pad on the elbow was needed to protect that part from the feeble impact of the string. If the pad was a sort of arm-guard surrounding the elbow, then one might surmise the use of a highly strung bow of Mongolian form held firmly and not permitted to rotate as in the Japanese style.

The peculiar twist given the bow by the Japanese archer is, so far as I know, unique in archery practice. In Siam, a bow of curious construction is used for throwing clay balls. The ball is held in a netting, the string of the bow is double, the bow-hand has the thumb braced vertically against the inside of the bow, so that it may not interfere with the flight of the ball. A peculiar twist is given the bow, so that the ball passes free from it.

I know of no record to show that the Japanese ever used a bow of this nature; in the Emperor's treasure-house at Nara, however, is preserved a curious bow nearly a thousand years old, and this is undoubtedly a bow used for throwing clay or stone balls. Instead of a netting to hold the ball there is a perforated leathern piece. This piece is adjusted to the cord a third way down the bow, at about the point from which the Japanese archer discharges the arrow. Whether the Japanese archer acquired this curious twirl of the bow to protect the feathers from rubbing against its side, or to escape the painful impact of the string, or, which is not improbable, acquired this novel twist from using the ball-throwing bow it is difficult to determine.

In regard to the release practiced by the various tribes in India, I have no information.

Through the courtesy of the lamented James Fergusson, I was permitted to examine his large collection of photographs of Indian Temples; and in a brief examination of these pictures I discovered a few releases in the sculptures. In the Peroor Temple near Coimbatore, an eight-armed God is represented as holding upright, between the first and second fingers of the right hand, an arrow. It is impossible to conjecture the form of release in this attitude; though, if the arrow were carried to the string in this position, the Mediterranean release would be suggested.

On the southwest face of the temple of Halabeed, Mysore, an archer is shown with the arrow already released; the attitude of the hand, however, suggests the Mediterranean form. In the Valconda, a small, ruined temple near Calamapoor, archers are shown having the tips of all the fingers on the string, in the same position as shown in the later Assyrian release; and this would indicate the secondary release.

These data are altogether too few and vague to determine the form or forms of release of these people.

Concerning ancient methods of archery in America, but little can be said. Probably the most reliable data are to be found in the few Mexican records which survived the shocking desecration by the Catholic Church at the time of the Conquest.[1]

An examination of the plates of Kingsborough's "Mexican Antiquities" reveals a number of hunters and warriors armed with bows and arrows. The figures at best are somewhat rudely drawn; those that are in action have the shaft-hand so poorly drawn that in most cases it is difficult to make out the release. In the few drawings in which the attitude of the shaft-hand is clearly shown, the tertiary release is probably indicated.

To Mrs. Zelia Nuttall Pinart I am indebted for tracings of archers from the *Atlas Duran*, Plate I., and *Mappe Quinatzin* I, Plate IV. These, though quite as ambiguous as those to be found in Kingsborough's, can only be interpreted as representing the tertiary release. In the latter

[1] The fiercely intolerant spirit of the representatives of the church is well illustrated by the language of a letter written by Zumarraga, the chief inquisitor of Mexico, to the Franciscan chapter at Tolosa, in January, 1531. The words are as follows: "Very reverend Father, be it known to you that we are very busy in the work of converting the heathen; of whom, by the grace of God, upwards of one million have been baptized at the hands of the brethren of the order of our Seraphic Father, Saint Francis; five hundred temples have been levelled to the ground, and more than twenty thousand figures of the devils they worshipped have been broken to pieces and burned."—*Examples of Iconoclasm by the Conquerors of Mexico*, by W. H. Holmes.

work, Plates 90 and 93 of Vol. II. show apparently a Mediterranean release; and were there no other reasons for believing that these people practiced the tertiary release, it might be assumed that the Mediterranean release was also practiced. The reasons are, first, that in every case the arrow is pulled to the breast or even lower; and, second, and of more importance, in every instance when the archer is shown with the right hand toward the observer, the arrow is below the bow-hand, whereas in every case when the archer is shown with the left hand towards the observer, the arrow is above the bow-hand. The bow is represented vertically, as in all rude and early figures; but the artist, not being able to represent the bow foreshortened and horizontal, has unconsciously indicated the attitude of the tertiary release by preserving the attitude of the bow in relation to the hand.

We have seen that the Mediterranean release has two forms, in one of which three fingers are brought into action; in the other only two fingers are so used. English authorities say that if one can accustom himself to draw the bow with two fingers, a better release is the result. While the difference between these two forms seems slight, as indeed it is, yet the practice to-day among European and American archers is to draw with three fingers. It was evidently not so universally the form in Europe a few centuries ago; for at this time, judging from the few examples we have seen, the archers are almost always depicted drawing with two fingers. It is true, the directions in the works of these early times as well as allusions to the subject state that three fingers on the string is the proper method of release. Yet the few sculptures, ivory carvings, etchings, manuscripts, drawings, etc., to which we have had access, almost invariably depict the two-fingered release.

It would be interesting to know whether the bow has

become stiffer in later years, requiring three fingers to bend it, or whether (as more probable) the fingers have become weaker, thus requiring more fingers to do the work.

It is interesting to find in these early works a uniformity in the method of release employed, and that the Saxon, Norman, Fleming, French, English, Scandinavian, and Italian practiced essentially the same release.

Hansard says (see the "Book of Archery," p. 77), "All representations of archers which occur in illuminated manuscripts of the thirteenth, fourteenth, and fifteenth centuries — and I have examined some scores of them — identify the ancient with the modern practice. The pen-and-ink drawings of John de Rous, a bowman as well as contemporary biographer of that Earl of Warwick who, during the Wars of the Red and White Roses, was the setter up and destroyer of many kings, will furnish amusement and information to the curious. The necessary slight inclination of the head and neck — 'this laying of the body in the bow,' the drawing with two and with three fingers — are there correctly delineated. They may be found among the manuscripts in the British Museum."

According to Hansard, Ascham ordered the shooting-glove to be made with three fingers, "and when Henry the Fifth harangued his troops previous to the battle of Agincourt, he endeavoured to exasperate their minds by dwelling on the cruelties in store for them. Addressing his archers, he said the French soldiers had sworn to amputate their three first fingers, so that they should never more be able to slay man or horse."[1]

[1] Meyrick, in his famous work on "Ancient Armour" (Vol. I., p. 9), in speaking of the origin of the bow in England, says: "The bow as a weapon of war was certainly introduced by the Normans; the Saxons, like the Taheite at the present day, used it merely for killing birds. On this account, in the speech which Henry of Huntington puts into the Conqueror's mouth before the battle, he makes him stigmatize the Saxon as 'a nation not even having arrows.'"

The earliest figure I have met with, illustrating archery in England, was copied from the Saxon manuscripts in the Cotton Library. These manuscripts are of the eighth century. If the wood-cut contained in Strutt's "Sports and Pastimes" is correct, then the attitude of the hands shows distinctly the three-fingered Mediterranean release. The bow is short and thick, and has a double curve, something like the Roman bow, from which indeed it might naturally have been derived.[1]

The following examples have come under my notice in a very hasty and imperfect survey of the field, principally derived from books, engravings, and ivory carvings, reproductions, etc., in museums.

The celebrated Bayeux Tapestry, a copy of which may be seen at the South Kensington Museum, represents the archers in the attitude of the two-fingered Mediterranean release, though a few are shown using three fingers. Also the following show the two-fingered form of the Mediterranean release without exception: a fresco in Kumla Church, Vestmanland Co., Sweden, 1492; a sculptured figure in wood by Albrecht Durer, figured in Sommerard's "Arts of the Middle Ages" (5th Series, Plate XXVII.), also in the same work (10th Series, Plate XXV.); a chess piece in ivory supposed to be of the tenth or eleventh century; in Meyrick's "Ancient Armour" (Plate VIII., Vol. I.), a figure of a Norman of the eleventh century, on the doorway of the Cathedral of Amiens, a cast of which may be seen at the Trocédero Museum; and, finally, in the Boston Museum of Fine Arts are a number of Florentine engravings of the early half of the fifteenth century, and these in every case represent in the

[1] It may be well to state here that opportunity has not permitted an examination of sources for early Roman releases. On Trajan's column a few releases are shown, and these are of the Mediterranean form.

clearest manner the two-fingered variety of the Mediterranean release. A curious form of the Mediterranean release is shown on the door of the Church of the Madeleine at Vezelay, a cast of which is to be seen at Trocédero Museum. In this release the archer has all four fingers on the string, the arrow being held between the second and third fingers. I had supposed that this was a mistake of the artist, as indeed it may have been, but Col. James Stevenson, in describing to me the methods of release among the Navajo Indians of North America, illustrated a release identical with this four-fingered variety.

In conclusion, it is interesting to observe that all the releases thus far described have been practiced from the earliest historic times. Each release with the exception of the primary release, which admits of no variation, has one or more varieties. The secondary release may have the second finger, or the second and third fingers on the string. Some forms of this release in India and Assyria show all the fingers on the string; it is hardly probable, however, that these are correctly represented. The tertiary release may have the first and second, or the first, second, and third fingers on the string. The Mediterranean release may be effected with two or three fingers, and in two instances all the fingers, on the string. The Mongolian release may have the assistance only of the first finger as in the Chinese and Manchu, or the first and second fingers as in the Korean and Japanese, — or, if rightly interpreted, the early Persian form, with the second and third only aiding the thumb; and if the Mongolian release described on page 161 be an established form, then we have here a mixture of Mongolian and secondary.

The persistence of a release in a people is well illustrated in the case of the Aino. For centuries the Ainos have

battled with the Japanese, and must have been mindful of the superior archery of their enemies; indeed on all hands, with the exception possibly of the Kamtschadals at the north, the Ainos have been surrounded by races practicing the Mongolian release, and yet have adhered to their primitive methods of shooting.

The releases vary in their efficiency and strength. The two strongest and perhaps equally powerful releases are the Mediterranean and Mongolian; and it is interesting to note the fact that the two great divisions of the human family who can claim a history, and who have been all dominant in the affairs of mankind, are the Mediterranean nations and the Mongolians. For three or four thousand years, at least, each stock has had its peculiar arrow-release, and this has persisted through all the mutations of time to the present day. Language, manners, customs, religions have in the course of centuries widely separated these two great divisions into nations. Side by side they have lived; devastating wars and wars of conquest have marked their contact; and yet the apparently trivial and simple act of releasing the arrow from the bow has remained unchanged. At the present moment the European and Asiatic archer, shooting now only for sport, practice each the release which characterized their remote ancestors.

Want of material will prevent more than a passing reference to a peculiar practice of archery which Moseley alludes to as pedestrial archery. It is a matter of common record that in widely separated parts of the world, as South America, China, and Africa, the archer uses his feet in drawing the bow. In an "Essay of Archery" by Walter Michael Moseley, 1792, the writer says: "It is recorded by ancient writers that the Ethiopians draw the bow with the feet;" and again, Xenophon speaking of the Caducians says: "They had bows which were three cubits long, and

arrows two cubits. When they made use of these weapons, *they placed their left foot on the bottom of the bow*, and by that method they drove their arrows with great violence," etc.

It is recorded of the Arabians that they used their bows in the manner above alluded to, by the help of the foot. The release in these cases must be of a most vigorous character; and when in some accounts the archer is represented as resting on his back, with both feet bracing against the bow, the string is probably clutched with both hands, after the manner I have provisionally called the archaic release.

In the following classified list of releases and the people who practice them, it is shown in a general way that the primary, secondary, and tertiary releases are practiced by savage races to-day, as well as by certain civilized races of ancient times; while the Mediterranean and Mongolian releases, though originating early in time, have always characterized the civilized and dominant races. The exceptions to this generalization are curious: the Little Andaman islanders practicing the Mediterranean release, and the inhabitants of the Great Andaman Island practicing the tertiary release, are an illustration. The fact that the various groups of Eskimo practicing the Mediterranean release, and so far as I know being the only people who have designed a distinct form of arrow for this method, is exceedingly curious. Mr. John Murdock, who is engaged in a careful study of the Eskimo, has expressed to me a surmise that certain arts of the Eskimo may have been derived from Greenland through Scandinavian colonists; and this might explain the anomaly.

It may be shown that in tribes in which the bow is but little used, and then only for small birds and game, the release is weak or irregular. The data, however, are altogether too few to establish any conclusions respecting this.

CLASSIFIED LIST OF TRIBES AND NATIONS REFERRED TO IN THIS PAPER.

RECENT.

PRIMARY RELEASE.

Savage.

Ainos of Yezo.	observed.
Demerara, S. A.	published.
Navajo, N. A.	reported.
Chippewa, N. A.	"
Micmac, Canada.	"
Penobscot, N. A.	observed.
Ute, N. A. ?	photograph.

SECONDARY RELEASE.

Savage.

Ottawa, N. A.	observed.
Zuñi, N. A.	"
Chippewa, N. A.	reported.

TERTIARY RELEASE.

Savage.

Omaha, N. A.	observed.
Sioux, N. A.	reported.
Arapahoes, N. A.	"
Cheyennes, N. A.	"
Assiniboins, N. A.	"
Comanches, N. A.	"
Crows, N. A.	"
Blackfeet.	"
Navajos, N. A.	"
Great Andaman Islander	published.

Civilized.

Siamese.	observed.

MEDITERRANEAN RELEASE.

Civilized.

European Nations.	observed and published.

Savage.

Point Barrow Eskimo.	reported.
Cumberland Sound Eskimo.	published.
East Cape Siberia Eskimo.	"
Little Andaman Islander.	"

MONGOLIAN RELEASE.

Civilized.

Manchu soldier, China. . .	observed.
Cantonese, China. . .	"
Korean.	"
Japanese.	"
Turks.	published.
Persians.	"

IRREGULAR RELEASE.

Temiangs, Sumatra. . .	observed.

ANCIENT.

PRIMARY RELEASE.

Civilized.

Assyrian, early.
Egyptian.
Grecian?

SECONDARY RELEASE.

Civilized.

Assyrian, later.
India?

TERTIARY RELEASE.

Civilized.

Egyptian.
Grecian.
Mexican?

MEDITERRANEAN RELEASE.

Civilized.

Assyrian, later.
Egyptian, early.
Arabian.
Indian.
Roman.

Middle Ages.

English.
French.
Norman.
Fleming.
Saxon.
Swede.
Florentine.

MONGOLIAN RELEASE.

Civilized.

Chinese.
Scythian.
Persian.
Egyptian. ?
Greek. ?

ARCHAIC RELEASE?

Civilized.

Ancient Greek.

It is hardly necessary to call attention to the importance of a more systematic study of the methods of archery and paraphernalia of the archers than has yet been done. I would point out the necessity of observing greater care in copying drawings, rock-inscriptions, frescos, bas-reliefs, etc., also the minor details, — such as the position of the hand, the shape and character of the ends of the bow and arrow, and the shape of the feathers; also the possibility and importance of identifying among ancient objects and drawings arm-guards, thumb-rings, arrow-rests, etc. Travellers and explorers ought also not only to observe the simple fact that such and such people use bows and arrows, but they should accurately record, (1) the attitude of the shaft hand; (2) whether the bow is held vertically or horizontally; (3) whether the arrow is to the right or to the left of the bow vertical; and (4), of which no comment has been made in this paper, whether extra arrows are held in the bow-hand or shaft-hand. The method of bracing the bow is of importance also.

The remarkable persistence of certain forms of arrow-release among various nations leads me to believe, that, in identifying the affinities of past races, the method of using the bow may form another point in establishing or disproving relationships. By knowing with more certainty the character and limitation of the forms of arrow-release,

another clew may be got as to the date and nature of fragments of sculpture representing the hand. The peculiar attitude of the archer might lead to the interpretation of armless statues.

The author would be very grateful for any information regarding the methods of arrow-release of tribes and peoples. Particularly would he desire the release as practiced by the Veddahs of Ceylon, the Hill tribes of India, the tribes of Africa, South America, and especially the Fuegans. Indeed, any information regarding the methods of arrow-release in any part of the world would be acceptable. Such material in the shape of descriptions, photographs, drawings, and if possible specimens of bows and arrows, may be sent to the author, Peabody Academy of Science, Salem, Mass., U.S.A., for which full credit will be given in a future publication on this subject.

In addition to those already mentioned in these pages to whom the author is under obligations, he would mention Gen. Charles A. Loring, Mr. Edward Robinson, Prof. Otis T. Mason, Rev. W. C. Winslow, Mr. T. F. Hunt, Dr. W. S. Bigelow, Prof. John Robinson, Mr. S. R. Koeller, and Prof. E. F. Fenollosa, who have in various ways rendered him kind assistance.